

LOCAL HF COMMUNICATIONS - PORTLAND AND CLYDE

INTRODUCTION

1 The Clyde and Portland groups of transmitter and receiver stations were developed separately to fulfil unique roles in support of submarine operations and sea training respectively. These roles will continue to be relevant for the foreseeable future.

2 Traditionally the implementation was in accordance with the practices of the 1970s with the siting of remote stations and commcens being fixed by geographical restraints. The systems were very labour intensive and involved a lot of real estate.

3 During the update of equipment programme, opportunity was taken to modernise, reducing both manpower and real estate requirements.

SYSTEM

4 The two systems are very similar, the equipment being identical to that provided for the UKMACCS. The systems are completely separate having no communications with any other system except as required by SSE(UK) to fulfil his engineering commitments.

5 Each system consists of a dual processor arrangement at a System Control Centre controlling the operation of equipment at remote unmanned transmitter and receiver stations. There is a control console, from which commands are originated for altering the status of any controlled equipment and monitoring its performance. Separately provided audio channels feed the transmitted and received information between operating positions and the remote sites with some connections to and from stations outside the main remote control system. Initially the audio signals will be plain voice, RATT or morse, but secure voice channels may be provided in the future.

6 To attain maximum flexibility in allocation of transmitter drive or receiver equipment, all modulation is generated/decoded at the Commcen and fed to/from the remote sites as audio signals, patching to the required line and associated equipment being carried out at the Commcen.

7 Interconnecting lines are generally BT landlines, with certain Clyde links being provided on the Clyde Radio Link system.

8 The transmit sub-system comprises:

- (1) Transmitter Drive Outfit (TDE) - 12 off remotely controlled synthesised hf drive units frequency range 1.5 to 30 MHz.

(2) Drive Combiner Outfit (TDF). Accepts inputs from drives in groups of four and combines them into three X and three Y rf outputs. Frequency range 1.6 to 28 MHz.

(3) Power Bank Outfit (WBP). Accepts X and Y outputs from drive combiners producing one X and one Y output. Employs six 1 kW wideband amplifiers operating in parallel with two additional as spares. Frequency range 1.6 to 28 MHz.

(4) Aerial Exchange. Remotely controlled five input, five output switching matrix. Switches X and Y outputs of Power Bank between aerials and dummy loads with power meters.

(5) Aerials. A selection of Conifan and monopole aerials giving full frequency range coverage.

9 The receiver sub-system comprises:

(1) Aerials. A selection of Conifan and monopole aerials giving full frequency range coverage.

(2) Aerial Multicoupler Outfit (EAV). 10-way multicoupler giving 19 outputs from each aerial. Frequency range 1.65-30 MHz.

(3) Aerial Exchange Outfit (ESG). 16 switched outputs from 38 inputs. Frequency range 30 kHz to 30 MHz.

(4) Receivers (CHM). 16 off remotely controlled, synthesised, double superhet receivers frequency range 10 kHz to 30 MHz.

10 Location of sites are:

(1) PORTLAND

COMMCEN - Portland COMMCEN
Transmit Site - Portland Bill
Receive Site - The Verne

(2) CLYDE

COMMCEN - Faslane COMMCEN
Transmit Site - Toward Taynuilt, Machrihanish
Receive Site - Clachmackenny, Machrihanish & Tiree

SYSTEM CONTROL

- 11 Control of the following system functions is possible:
- (1) Channel frequency pair selection (1 × Tx, 1 × Rx).
 - (2) Channel allocations.
 - (3) Fault diagnosis.

RECEIVER CONTROL

- 12 Control of the following is possible:
- (1) Selection of Rx aerial.
 - (2) Receiver control including:
 - a. Tuning.
 - b. Receive mode.
 - c. AGC time constant.
 - d. Filter bandwidth.
 - e. Reconstituted carrier.
 - (3) Stations Services.

TRANSMITTER CONTROL

- 13 Control of the following is possible:
- (1) Drive control including:
 - a. Tuning
 - b. Selection of X or Y output.
 - c. Power Boost.
 - (2) Power Bank control including:
 - a. Selection of 1 kW amps for operation.
 - b. HT power switching.

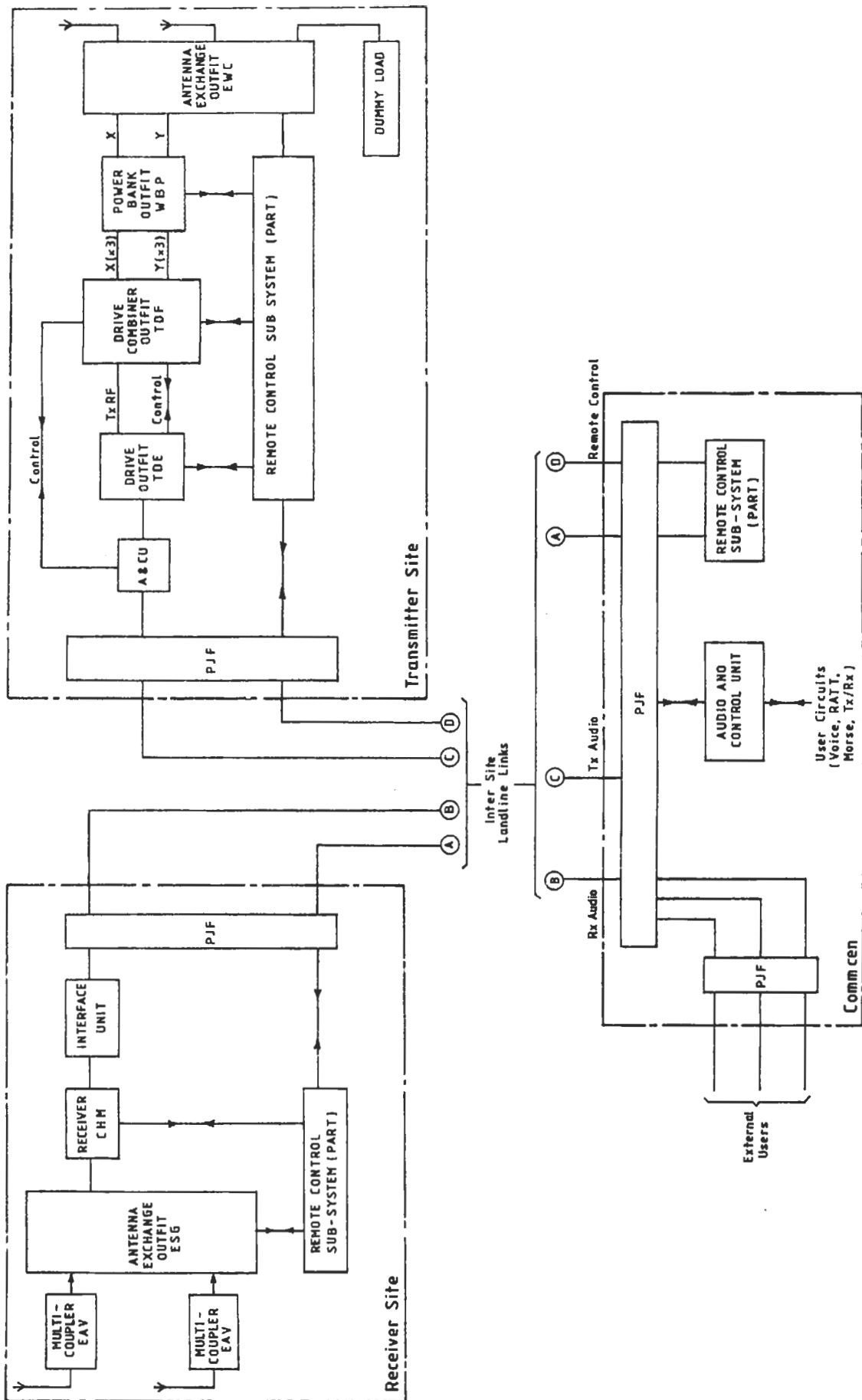
c. Selection of Bank Activation Mode: OFF, MANUAL or AUTOMATIC.

d. Control and monitoring of Cooling and Fire Protection.

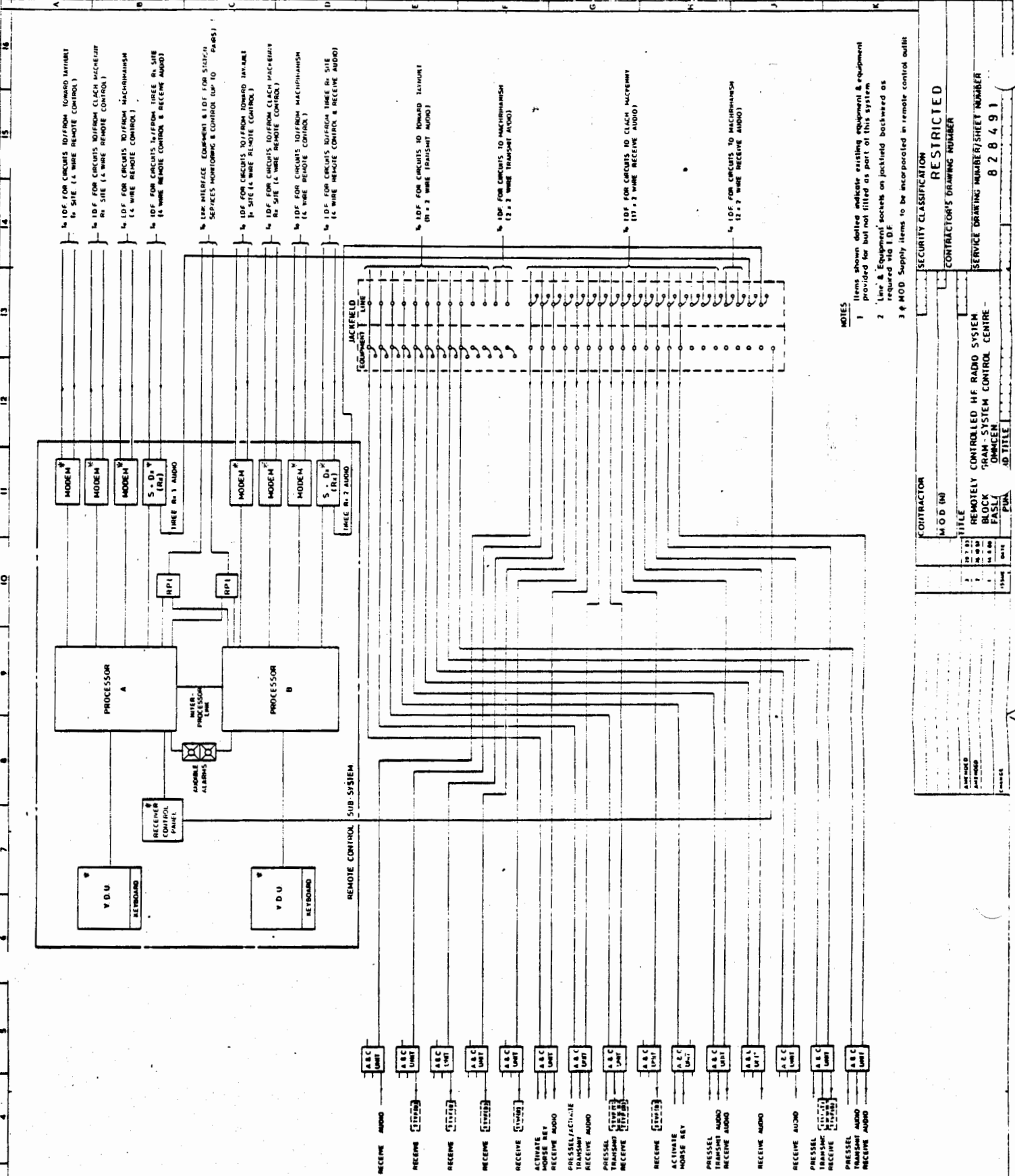
e. Power output monitoring.

(3) Aerial and Dummy Load selection.

(4) Station Services.



HF LOCAL COASTAL COMMUNICATION SYSTEM



- NOTES**
- 1 Items shown dashed indicate existing equipment & equipment provided for but not fitted as part of this system.
 - 2 'Lew' & Equipment sockets on jackfield backwired as required via IDF.
 - 3 # MOD Supply items to be incorporated in remote control outfit.

SECURITY CLASSIFICATION RESTRICTED	
CONTRACTOR'S DRAWING NUMBER 8 2 8 4 9 1	
SERVICE DRAWING NUMBER/SHEET NUMBER 8 2 8 4 9 1	
CONTRACTOR MOD (M)	TITLE REMOTELY CONTROLLED HF RADIO SYSTEM BLOCK FROM SYSTEM CONTROL CENTRE - OMNISCEN FASLI
DRAWN BY 15/04	CHECKED BY 15/04
DESIGNED BY 15/04	APPROVED BY 15/04
PROJECT NO. 15/04	SHEET NO. 15/04

RESTRICTED
 DRAWING NUMBER/SHEET NUMBER
 8 2 8 4 9 1

SECURITY CLASSIFICATION

RESTRICTED

SERVICE DRAWING NUMBER / SHEET NUMBER

8 2 8 4 8 6

USED ON

JACKFIELD

PRESSEL

AUDIO

DRIVE OUTFIT 10E1

DRIVE 1

DRIVE 2

DRIVE 3

DRIVE 4

DRIVE 5

DRIVE 6

DRIVE 7

DRIVE 8

DRIVE 9

DRIVE 10

DRIVE 11

DRIVE 12

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

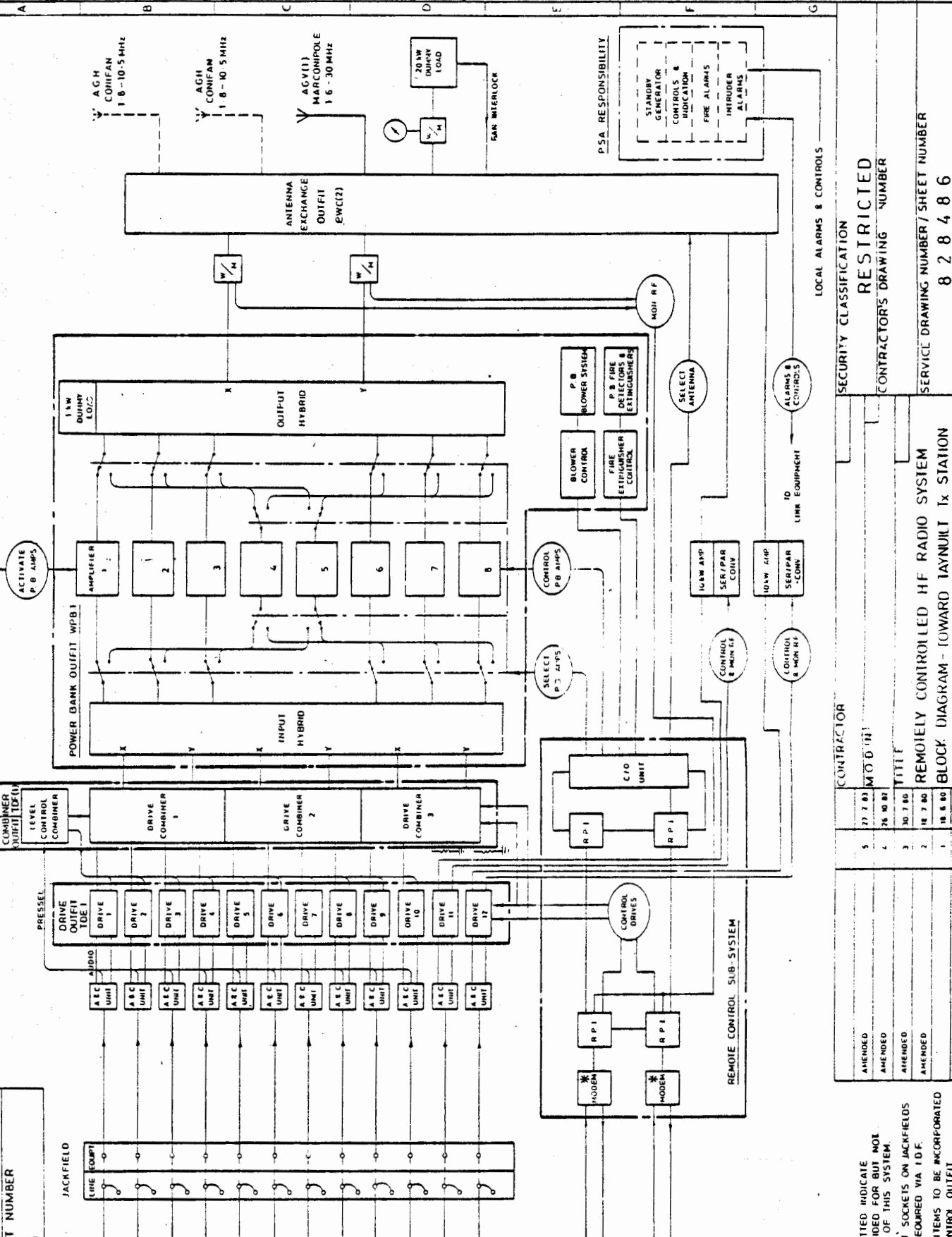
AEC UNIT

AEC UNIT

AEC UNIT

AEC UNIT

to MDF for CIRCUITS from FASLANE COMB-CEN



NOTES

- 1 ITEMS SHOWN DOTTED INDICATE EQUIPMENT PROVIDED FOR BUT NOT FITTED AS PART OF THIS SYSTEM.
- 2 LINE & EQUIPMENT SOCKETS ON JACKFIELDS BACKWIRED AS REQUIRED VIA I.D.F.
- 3 * M.O.D SUPPLY ITEMS TO BE INCORPORATED IN REMOTE CONTROL OUTFIT.

REV	DATE	TITLE	BY	CHKD
5	27.7.80	MOD IN		
4	18.10.80			
3	10.7.80			
2	18.7.80			
1	18.6.80			

CONTRACTOR

SECURITY CLASSIFICATION

RESTRICTED

CONTRACTOR'S DRAWING NUMBER

SERVICE DRAWING NUMBER / SHEET NUMBER

8 2 8 4 8 6

ERTS

CHECKED

DRAWN

REvised

SECURITY CLASSIFICATION

RESTRICTED

SERVICE DRAWING NUMBER / SHEET NUMBER

8 2 8 4 8 7

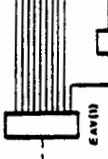
USED ON

1 2 3 4 5 6 7 8 9 10 11

A B C D E F

AGF CONIFAN
3 - 30 MHz

PUSHER ELEMENT
(12 metre)

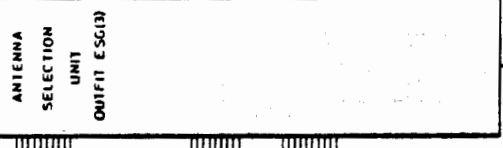


EAV (I)

EAV (I)

EAV (I)

EAV (I)



ANTENNA
SELECTION
UNIT
OUTFIT ESC(13)

RECEIVERS
(CHM 1)

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

INTERFACE
UNITS

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

JACKFIELD
GROUP / LINE

1

2

3

4

5

6

7

8

9

10

11

12

13

14

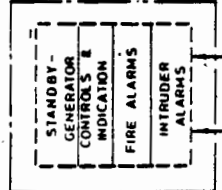
15

16

17

TO M.D.F. FOR LINES
TO FASLAINE COMMON

P.S.A. RESPONSIBILITY



LOCAL ALARMS
& CONTROLS



SELECT
ANTENNA

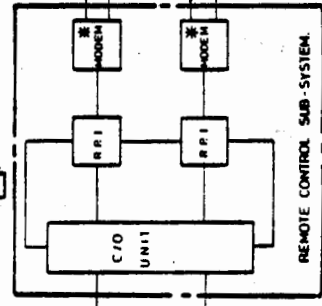
ALARMS & CONTROLS



ALARMS &
CONTROLS



CONTROL
RECEIVERS



REMOTE CONTROL SUB-SYSTEM

NOTES

- 1 ITEMS SHOWN DOTTED INDICATE EQUIPMENT PROVIDED FOR BUT NOT FITTED AS PART OF THIS SYSTEM.
- 2 LINE & EQUIPMENT SOCKETS ON JACKFIELDS BACKWired AS REQUIRED VIA I.D.F.
- 3 * MOD. SUPPLY ITEMS TO BE INCORPORATED IN REMOTE CONTROL OUTFIT.

1:1
CHECKED
DRAWN
R. S. S.
11

AMENDED	DATE	ISSUE	CHANGES
5	27.7.83	1	
4	26.10.82	2	
3	24.2.82	3	
2	17.2.80	4	
1	12.8.80	5	

CONTRACTOR
MOORE
FILE

REMOVED CONTROLLED HF RADIO SYSTEM
BLOCK DIAGRAM - CLACH MACKENNY Rx. STATION.

1:1:1:1 CARD TITLE

SECURITY CLASSIFICATION
RESTRICTED

CONTRACTOR'S DRAWING NUMBER

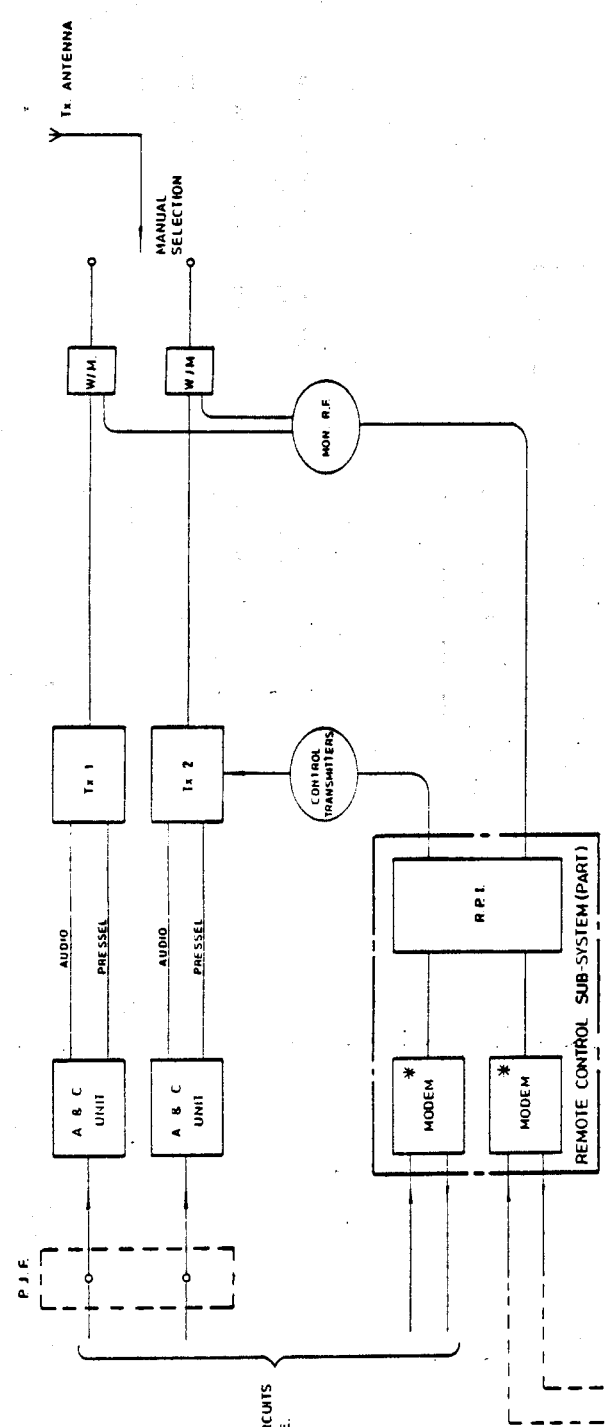
SERVICE DRAWING NUMBER / SHEET NUMBER
8 2 8 4 8 7

SECURITY CLASSIFICATION
RESTRICTED
 SERVICE DRAWING NUMBER / SHEET NUMBER
8 2 8 4 9 5

USED ON

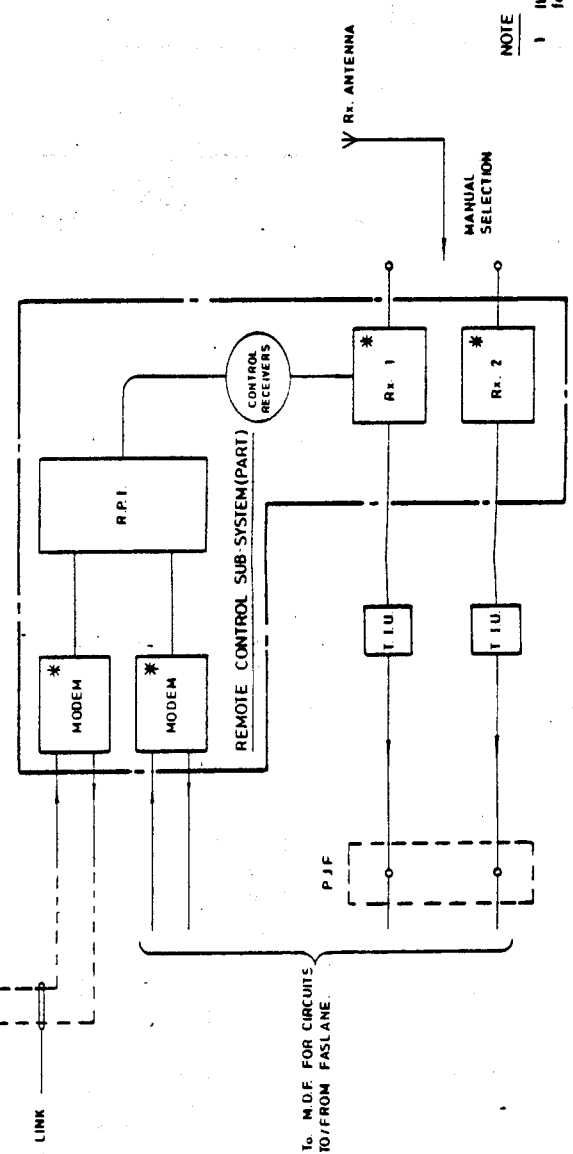
To M D F FOR CIRCUITS TO/FROM FASLANE.

TRANSMITTER SITE



4 WIRE INTER SITE LINK

RECEIVER SITE



NOTE

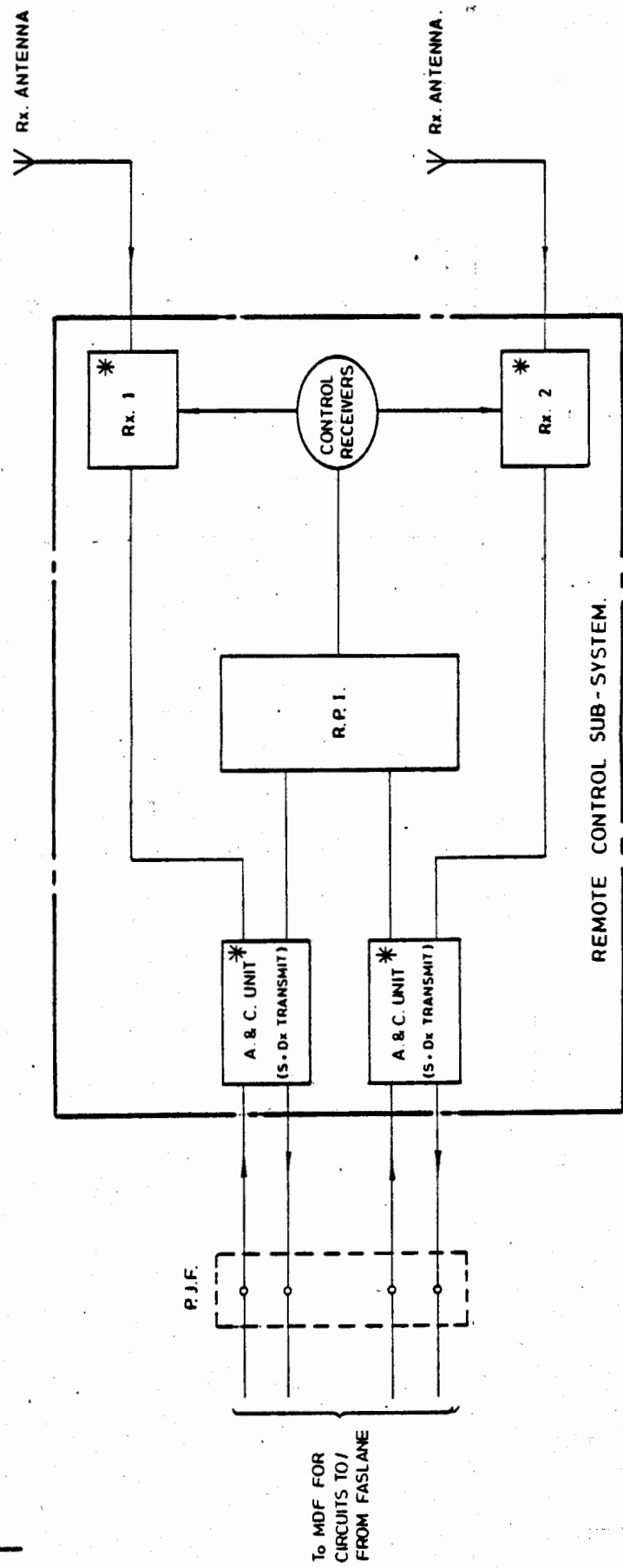
- 1 Items shown dotted indicate equipment provided for but not fitted as part of this system.
- 2 * M.O.D. Supply items to be incorporated in remote control outfit.

SECURITY CLASSIFICATION	RESTRICTED
CONTRACTOR'S DRAWING NUMBER	
SERVICE DRAWING NUMBER / SHEET NUMBER	8 2 8 4 9 5
CONTRACTOR	
M.O.D. N	
AMENDED	3 28.7.83
AMENDED	7 26.10.82
AMENDED	1 11.9.80
REVISIONS	
CHECKED	
DATE	
BY	
REVISIONS	
CHECKED	
DATE	
BY	

REMOTELY CONTROLLED H.F. RADIO SYSTEM
 TRANSMITTERS & RECEIVERS - MACHRIHANISH

SECURITY CLASSIFICATION
RESTRICTED
SERVICE DRAWING No./SHT. No
8 2 8 5 3 8

USED
ON



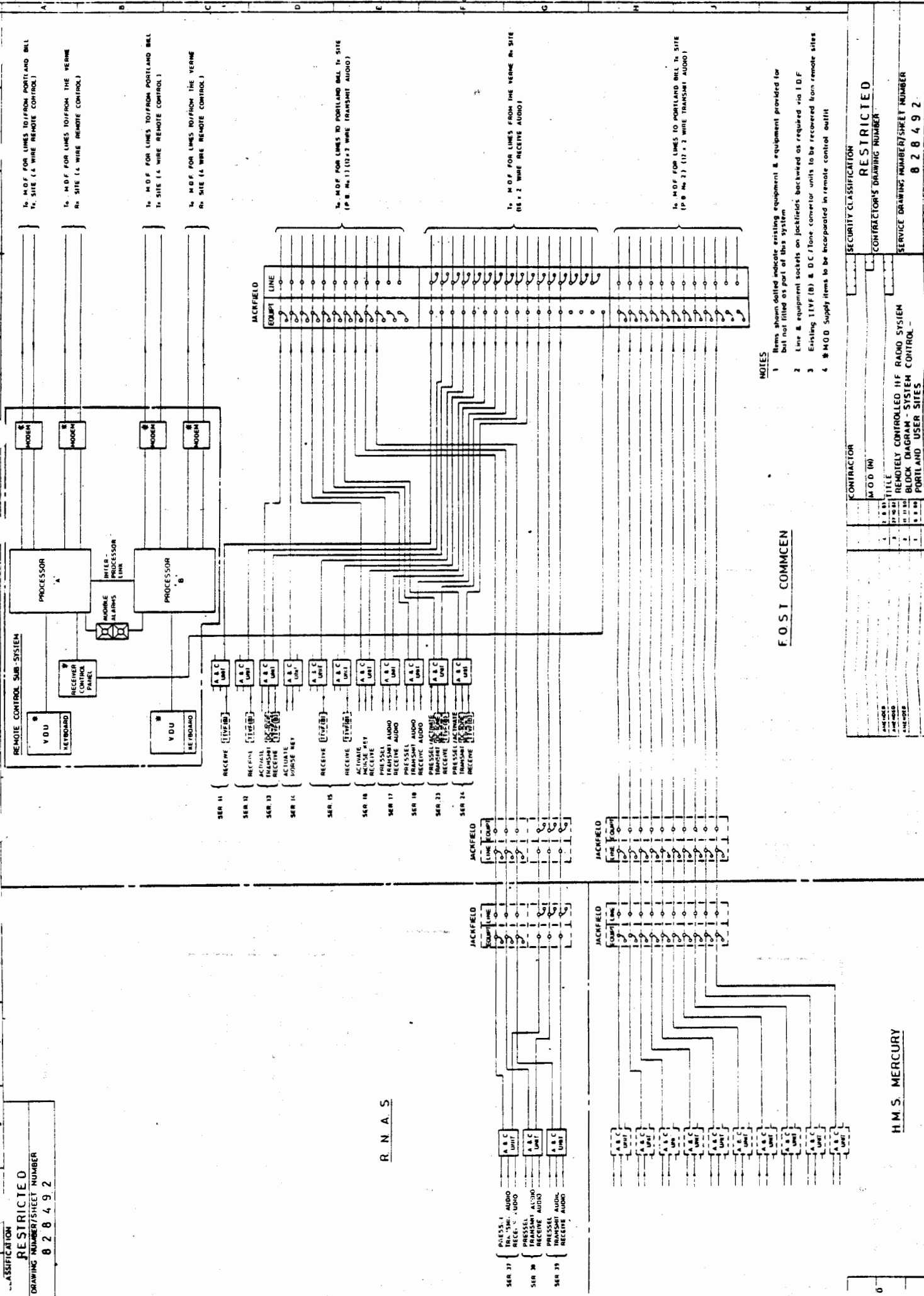
NOTE

- 1 Item shown dotted indicates equipment provided for but not fitted as part of this system.
- 2 * M.O.D. Supply items to be incorporated in remote control outfit.

CERT'D
CHECKED
DRAWN
12 B

CONTRACTOR		SECURITY CLASSIFICATION	
M.O.D.(N)		RESTRICTED	
TITLE		CONTRACTOR'S DRG. No.	
AMENDED.		SERVICE DRAWING No./SHT. No	
2	26.7.83	REMOVED CONTROL H.F. RADIO	
1	20.4.83	SYSTEM RECEIVERS. TIREE.	
CHANGE	ISSUE	DATE	
PUNCH	J	TITLE	
		8 2 8 5 3 8	

CLASSIFICATION
RESTRICTED
 DRAWING NUMBER/SHEET NUMBER
8 2 8 4 9 2



R. N. A. S.

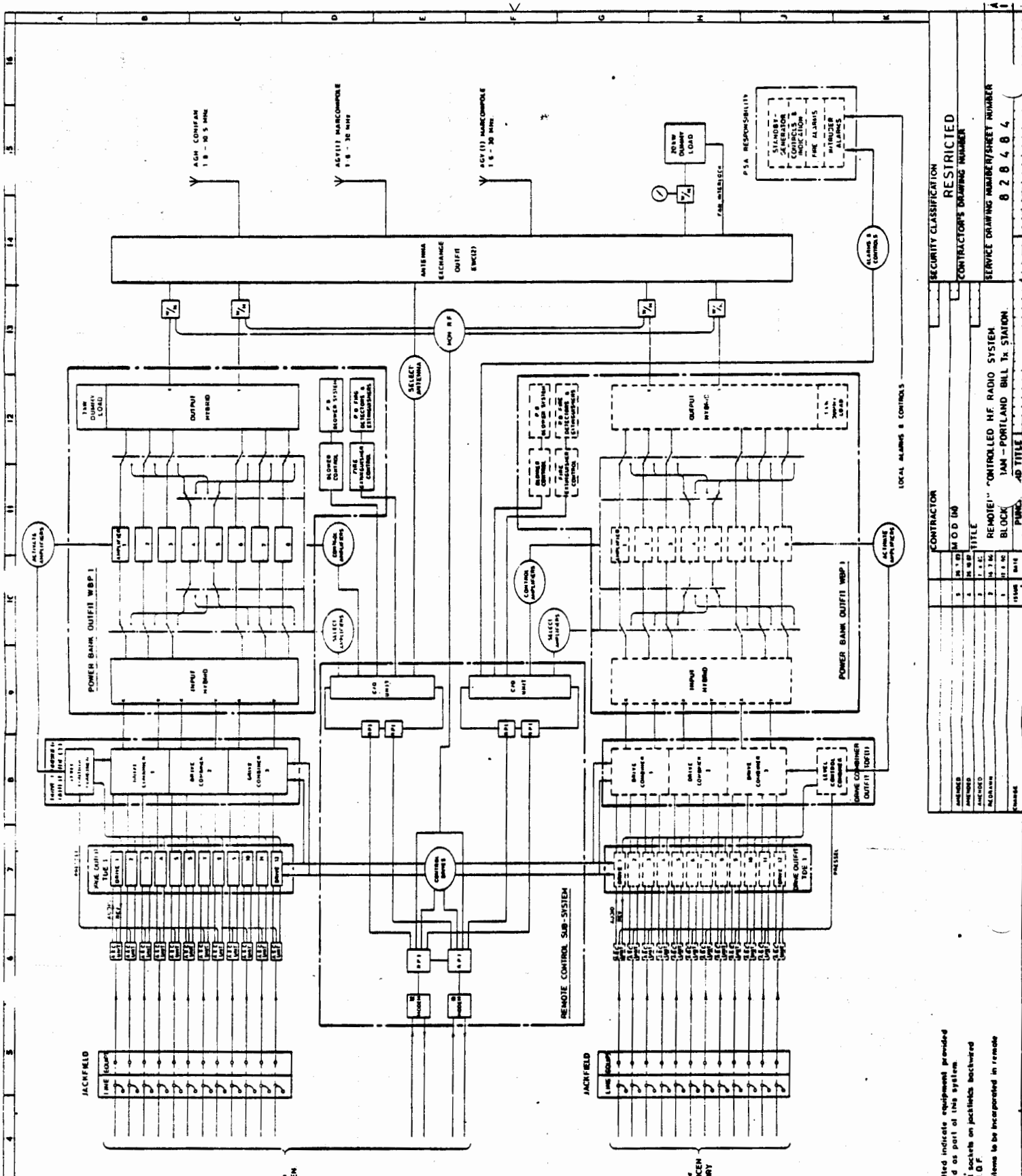
NOTES

- 1 Items shown dotted indicate existing equipment & equipment provided for but not fitted as part of this system
- 2 Line & equipment sockets on Jackfields backwired as required via IDF
- 3 Existing TTYF (B) & D.C. / tone converter units to be recovered from remote sites
- 4 # MOD Supply items to be incorporated in remote control outfit

F. O. S. T. COMMENCEN

SECURITY CLASSIFICATION RESTRICTED	
CONTRACTOR'S DRAWING NUMBER	
SERVICE DRAWING NUMBER/SHEET NUMBER 8 2 8 4 9 2	
PUNCH CARD TITLE	
CONTRACTOR M. O. D. (M)	
TITLE REMOTE CONTROL HF RADIO SYSTEM BLOCK DIAGRAM - SYSTEM CONTROL - PORTLAND USER SITES	CONTRACT 11/66

H. M. S. MERCURY



To M.O.F
for LINES from
FOST CONAKEN

To M.O.F for
LINES from CONAKEN
for H.M.S. MERCURY

CLASSIFICATION
RESTRICTED
DRAWING NUMBER/SHEET NUMBER
8 2 8 4 8 4

NOTES

- Items shown dotted indicate equipment provided for but not fitted as part of this system.
- Line & Equipment sockets on jackfields backwired as required and I.D.F.
- # M.O.D. Supply items to be incorporated in remote control outfit

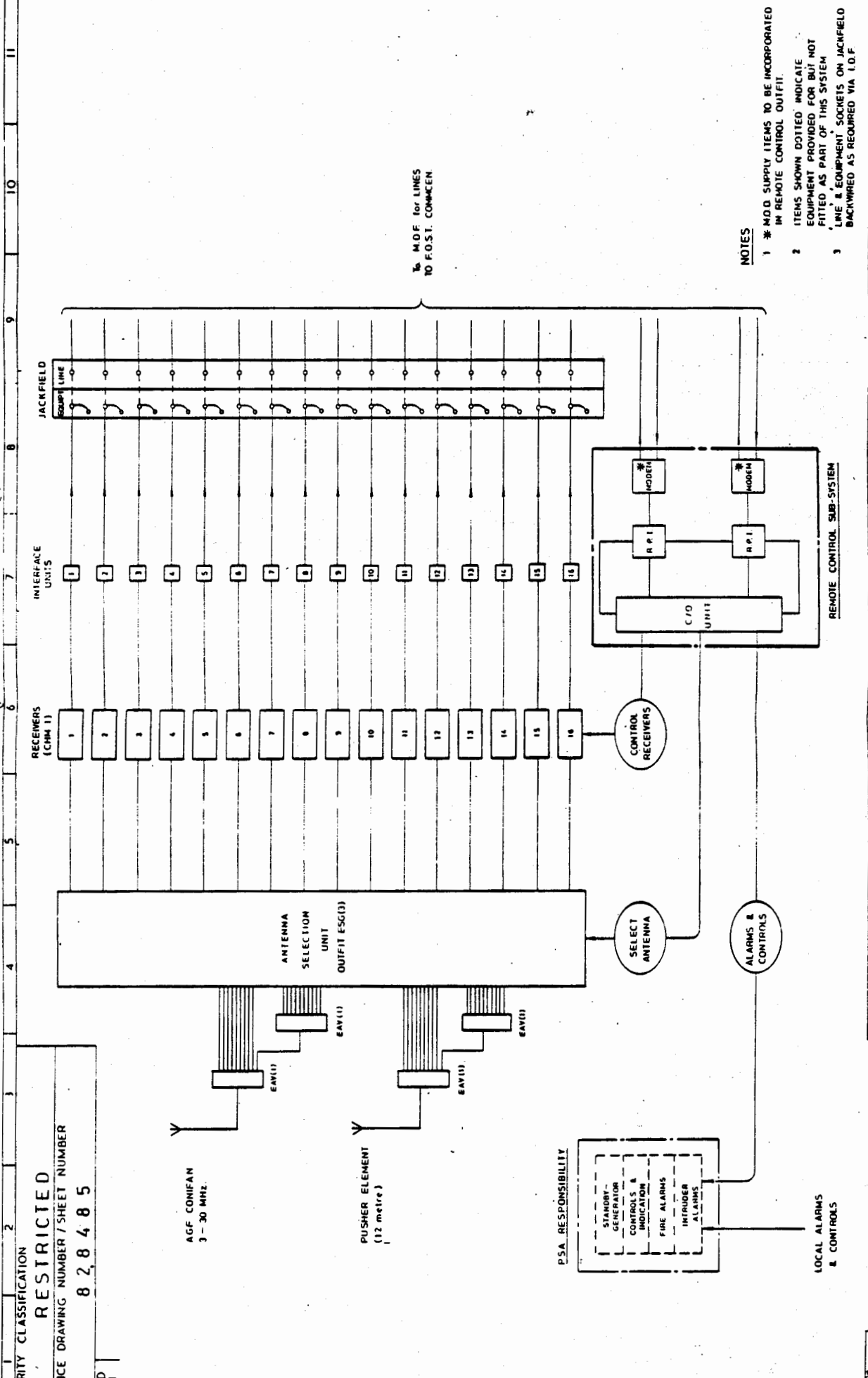
CONTRACTOR

REVISED	NO. 1	DATE	BY
REVISED	NO. 2	DATE	BY
REVISED	NO. 3	DATE	BY
REVISED	NO. 4	DATE	BY
REVISED	NO. 5	DATE	BY
REVISED	NO. 6	DATE	BY
REVISED	NO. 7	DATE	BY
REVISED	NO. 8	DATE	BY
REVISED	NO. 9	DATE	BY
REVISED	NO. 10	DATE	BY
REVISED	NO. 11	DATE	BY
REVISED	NO. 12	DATE	BY
REVISED	NO. 13	DATE	BY
REVISED	NO. 14	DATE	BY
REVISED	NO. 15	DATE	BY
REVISED	NO. 16	DATE	BY

SECURITY CLASSIFICATION
RESTRICTED
CONTRACTOR'S DRAWING NUMBER

REMOBILE CONTROLLED HF RADIO SYSTEM
BLOCK 10M - PORTLAND BILL TR STATION
DRAWING NUMBER/SHEET NUMBER
8 2 8 4 8 4

CONTRACTOR
MOD 10A
TITLE
REMOBILE CONTROLLED HF RADIO SYSTEM
BLOCK 10M - PORTLAND BILL TR STATION
DRAWING NUMBER/SHEET NUMBER
8 2 8 4 8 4



M.D.F. for LINES TO F.O.S.T. COMM-EN

NOTES

- 1 * M.D.D. SUPPLY ITEMS TO BE INCORPORATED IN REMOTE CONTROL OUTFIT.
- 2 ITEMS SHOWN DOTTED INDICATE EQUIPMENT PROVIDED FOR BUT NOT FITTED AS PART OF THIS SYSTEM
- 3 LINE & EQUIPMENT SOCKETS ON JACKFIELD BACKWIRRED AS REQUIRED VIA I.O.F.

SECURITY CLASSIFICATION	RESTRICTED
CONTRACTOR'S DRAWING NUMBER	
SERVICE DRAWING NUMBER / SHEET NUMBER	8 2 8 4 8 5

CONTRACTOR	
MOD (37)	
TITLE	REMOTELY CONTROLLED HF RADIO SYSTEM BLOCK DIAGRAM - THE VERNE Rx STATION.
ISSUE	DATE
05	22.2.83
04	15.10.82
03	24.7.80
02	17.7.80
01	12.6.80
CHANGE	

CERT'S	
CHECKED	
DRAWN	K. S. L.

SECURITY CLASSIFICATION
RESTRICTED

SERVICE DRAWING NUMBER / SHEET NUMBER
8 2 8 4 8 5

USED ON